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Newport
South Wales
NP10 8QQ

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I also certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

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Signed Stephen Hordley

Dated 22 December 2003

Patents Form 1/77

Patents Act 1977
(Rule 16)

THE PATENT OFFICE
A
23 OCT 2002
NEWPORT

The Patent Office

1/77

Request for grant of a patent

(see the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road, Newport
South Wales NP9 1RH

1. Your reference — **P651911GB**

230CT02 E757955-1 D02835
P01/7700 0.00-0224644.5

2. Patent application number *(The Patent Office will fill in this part)* — 0224644.5 — 23 OCT 2002

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

DAVID HACKETT
11 Regents Park,
Duchy Road,
Salford. M6 7DS

Patents ADP number *(if you know it)* 7861453002

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention — **A CASTOR**

5. Name of your agent *(if you have one)*

URQUHART-DYKES & LORD

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Greg's Buildings,
1 Booth Street,
Manchester. M2 4DU

Harrison Goddard Fo
Orlando House
11c Compstall Road
Maple Bridge
Stockport
SK6 5HH.

Patents ADP number *(if you know it)* 16446014 000 14571002.

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(If you know it)*	Date of filing *(day/month year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day/month/year)*

8. Is a statement of inventorship and or right to grant of a patent required in support of this request? *(Answer "Yes" if:)*
a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body;
see note (d)

NO

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	0
Description	5
Claim(s)	0
Abstract	0
Drawing(s)	1 + 1

CF

10 If you are also filing any of the following items state how many against each item:

Priority documents	
Translation of priority documents	
Statement of inventorship and right to grant of a patent *(patents form 7/77)*	
Request for preliminary examination and search *(patents form 9/77)*	
Request for substantive examination *(patents form 10/77)*	
Any other documents *(please specify)*	

11 I/We request the grant of a patent on the basis of this application.

Signature Date **22/10/02**

Urquhart-Dykes & Lord.

URQUHART-DYKES & LORD

12 Name and daytime telephone number of person to contact in the United Kingdom **0161 832 9353 - M J AJELLO**

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom , Section 23 of the Patent Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) if you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.

b) Write your answers in capital letters using black ink or you may type them.

c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.

d) If you have answered "Yes" Patents Form 7/77 will need to be filed

e) Once you have filled in the form you must remember to sign and date it.

f) For details of the fee and ways to pay please contact the Patent Office.

A CASTOR

THIS INVENTION relates to castors.

Many mobile devices such as shopping and hospital trolleys are manoeuvrable on four such castors, usually one at each corner, and such devices are notorious for their inability in certain circumstances to permit the trolley to be manoeuvred in a straight line, particularly when heavily loaded and when it is required to direct the trolley around corners. This difficulty arises largely through the inability of the castors to rotate freely about their upright axes.

It is an object of the present invention to provide a castor with increased freedom of rotation about the upright axis on which it is mounted on the frame or chassis of the trolley.

Typically, such castors are mounted on a thrust bearing which may be subject to contamination or wear such that the relatively moveable parts of the bearing assembly tend to become stiff or misaligned.

According to the present invention there is provided a castor comprising a fork having a pair of dependent lobes between which extends a transverse axle bearing a wheel, the fork being freely rotatable on a first upright axis with respect to a first upright member connected to the fork, the first upright member being freely rotatable on a second upright axis with respect to a second upright member connected to the first upright member, the second upright member being adapted for connection to a frame or chassis member of a load bearing object such as a trolley.

Preferably, the first and second upright axes are aligned.

The castor may comprise three or more roller or ball bearings.

One of the bearings may be a thrust bearing.

The second upright member may be welded to the frame or chassis member.

The fork, first upright member and second upright member may be held in aligned assembly by a single central bolt or rivet.

The first upright member may include a roller bearing axially aligned with said first upright member.

The second upright member may comprise a pair of axially aligned roller bearings each aligned with the second upright member.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawing which is a vertical elevation, partly in cross-section, illustrating the castor and its connection to a frame member of a trolley.

In this embodiment there is provided a castor wheel 10 mounted on a transverse axle 11 extending between a pair of lobes 12 of a fork generally indicated at 13.

A cross plate 14 at the top of the fork is connected via a thrust bearing 15 to a first upright member 16 by means of a bolt 17 the shaft of which extends upwardly through the entire bearing assembly to be secured by a nut 18 and washer 19.

Surrounding the shaft of the bolt 17 within the first upright member 16 is the inner part of a first concentric roller bearing 20. Thus,

the fork 13 is freely rotatable about the vertical axis of the bolt 17 with respect to the first upright member 16, and the latter is also freely rotatable about the axis of the bolt 17.

Also mounted on the shaft of the bolt 17 above the first upright member 16 is a second upright member 21. This member is mounted on a pair of axially aligned roller bearings 22 and 23 such that the cylindrical wall of the second upright member 21 is rotatable on the bearings 22 and 23 with respect to the bolt 17, to the first upright member 16 and to the fork 13.

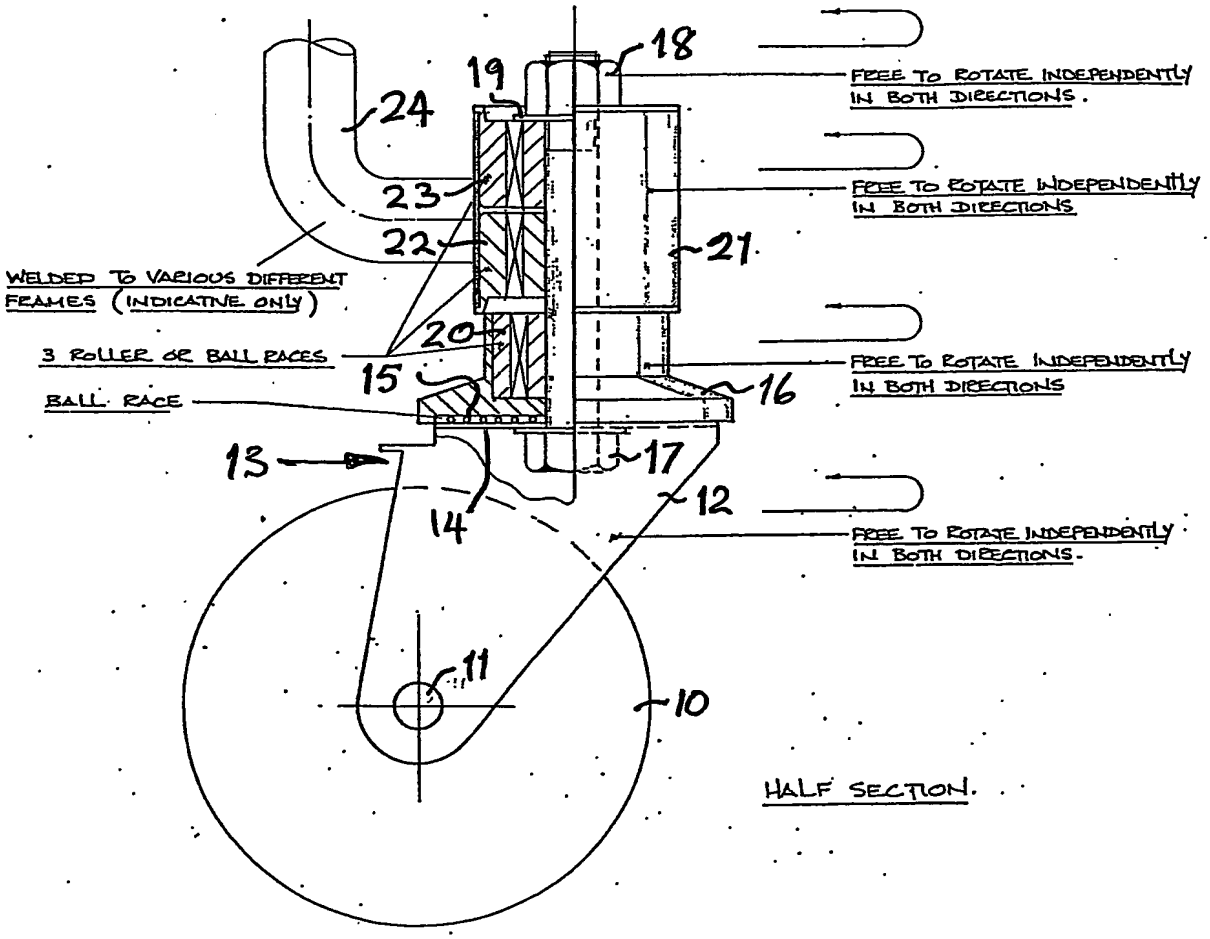
Welded or otherwise attached to the cylindrical wall of the second upright member 21 is a frame member 24 of a trolley or other load bearing object.

It will therefore be seen that the fork 13, the first upright member 16 and the second upright member 21 are all freely rotatable relative to one another thus providing entirely free rotation of the castor with respect to the frame member 24.

If preferred, the roller bearings 20, 22 and 23 may be replaced by ball bearings.

If required, the upright axes of rotation of the first upright member 16 and the second upright member 21 may be displaced by the interposition of a horizontal plate attached to one or other of the upright members and rotatable with respect to the other such upright member upon a thrust bearing or the like. Preferably however all axes of rotation are aligned thus ensuring complete freedom of rotary movement of the respective parts of the assembly.

Although not illustrated, a shroud may be provided at the interface of each pair of relatively rotational members thus to minimise the risk of contamination of the bearings by dust and the like.



HALF SECTION.

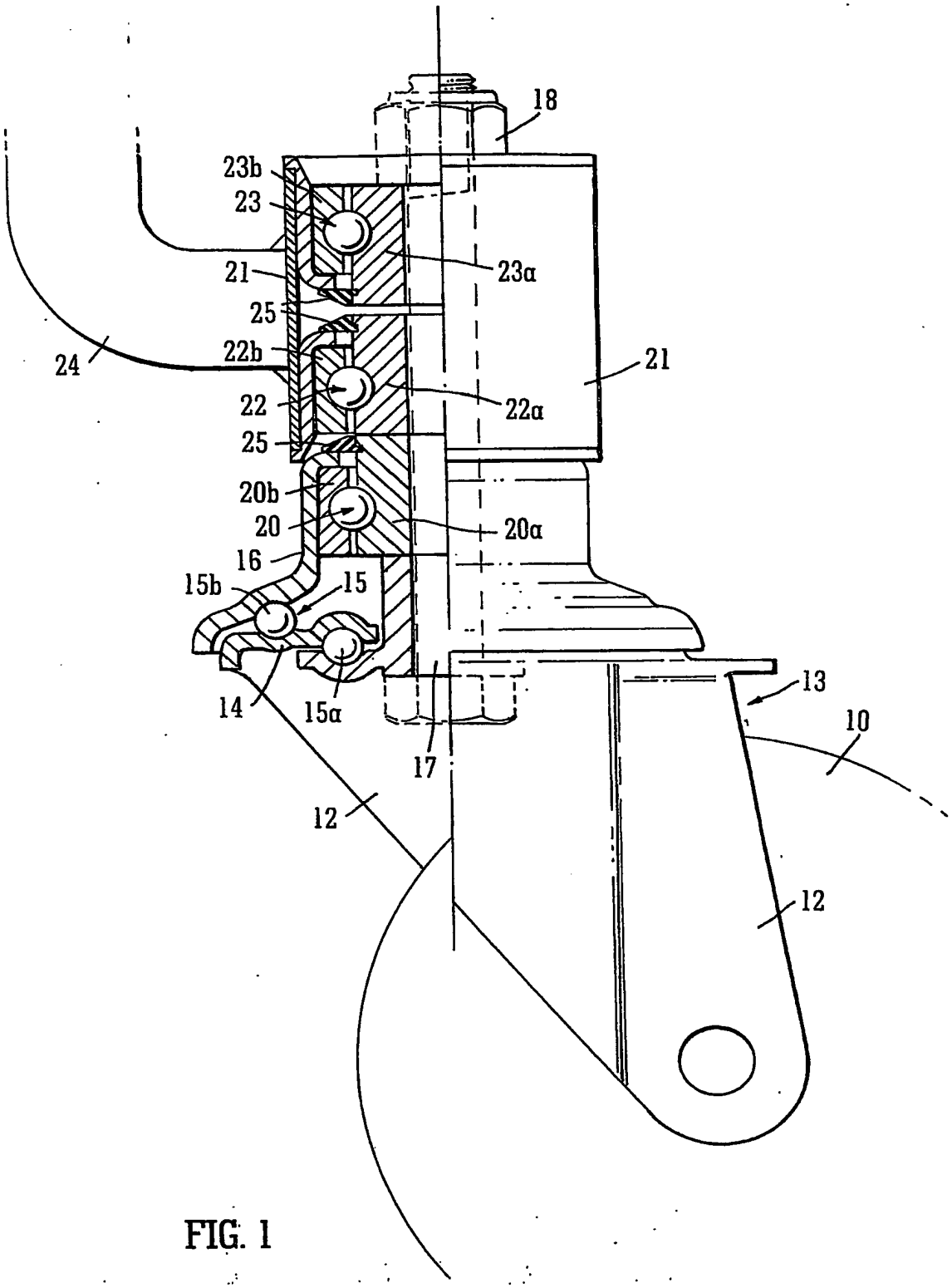

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FIG. 1

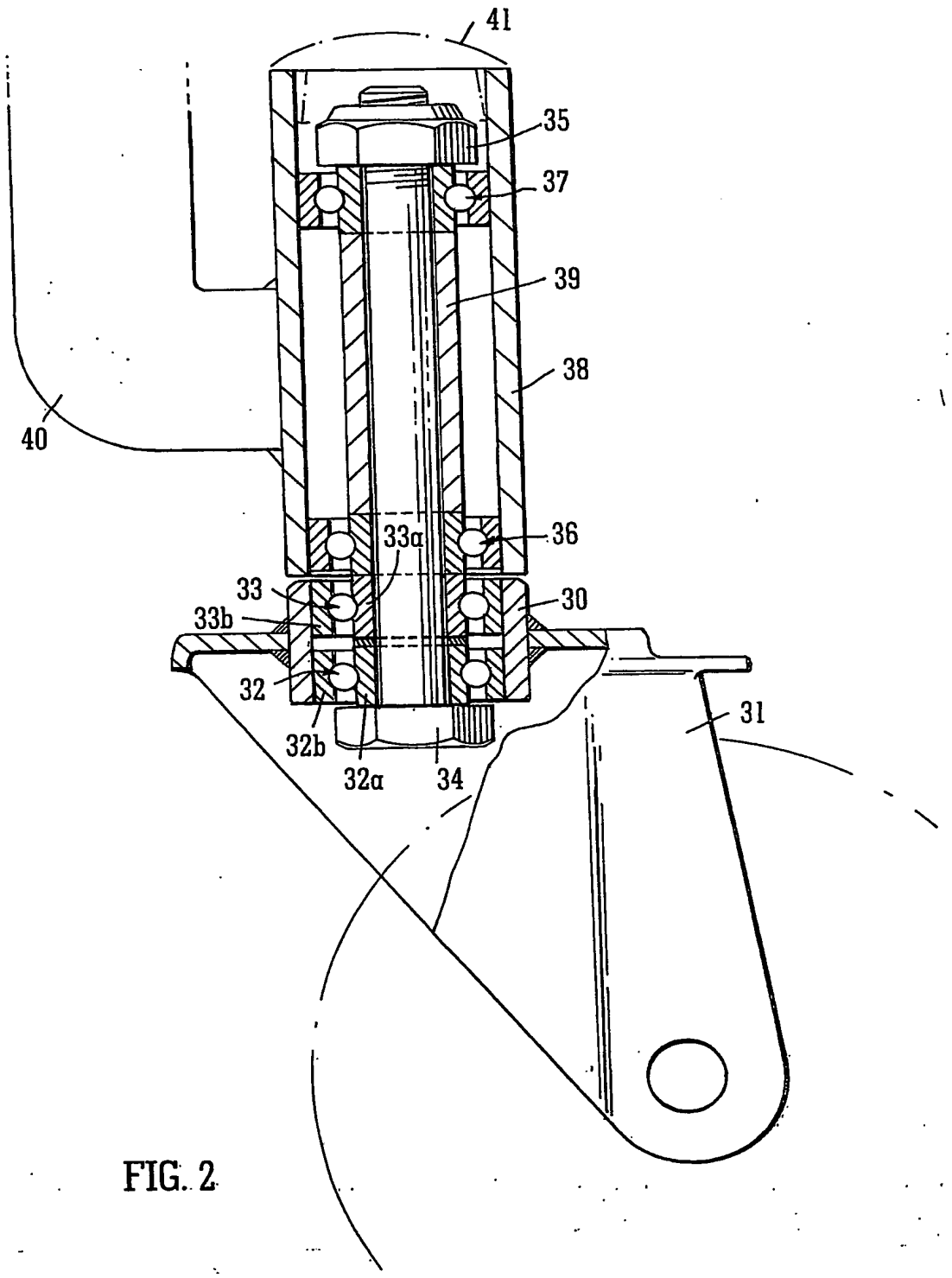


FIG. 2

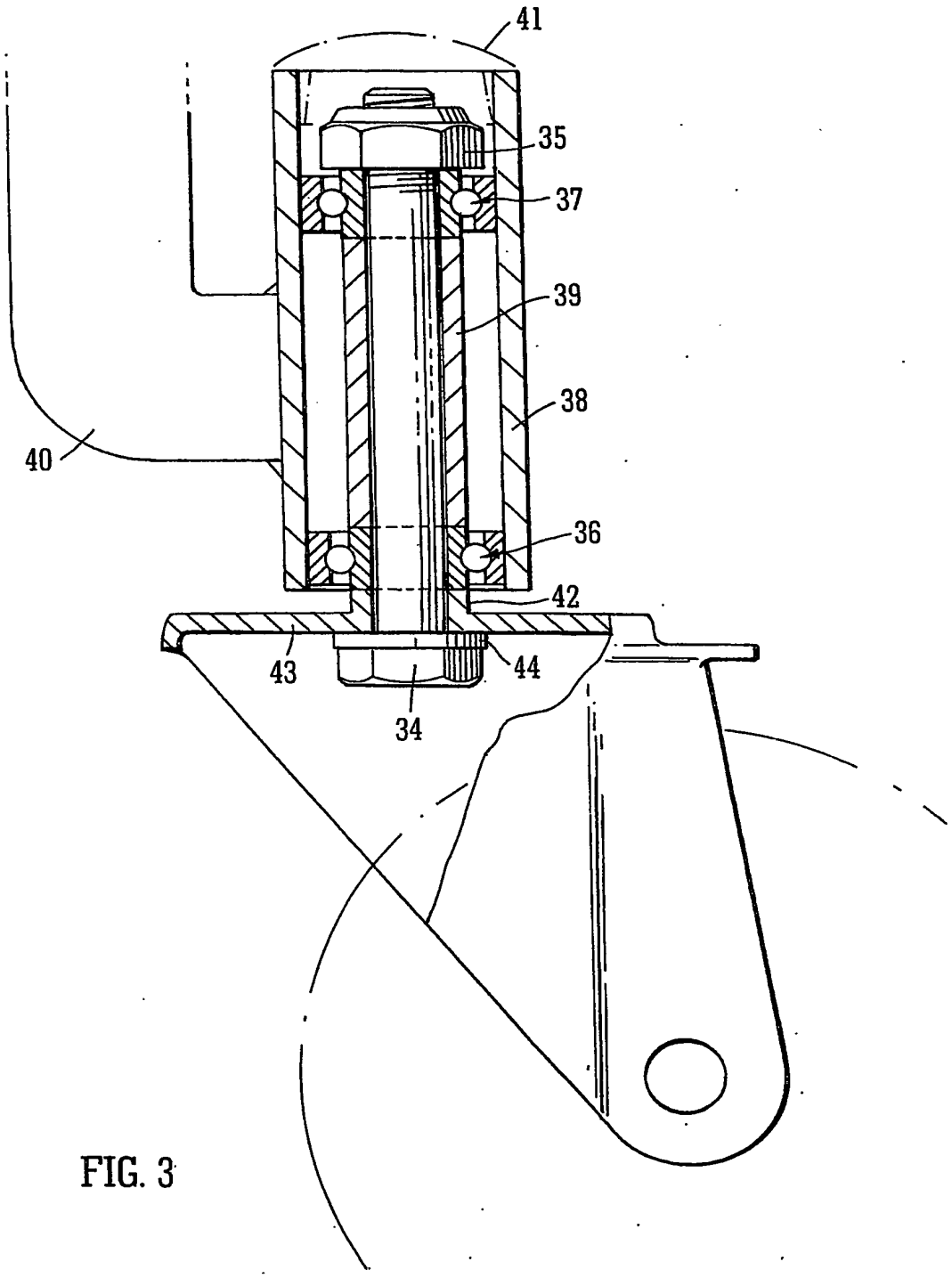
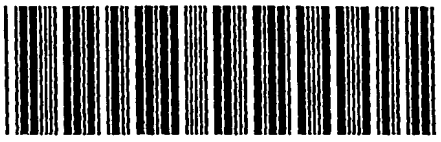


FIG. 3

PCT Application
GB0304569



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